Diet-Induced Obesity and Traumatic Brain Injury: Potential Role of Hepatic Inflammation as a Mediator of Behavioural Dysregulation

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ABSTRACT

Traumatic brain injury (TBI) triggers primary injury mechanisms that progressively evolve into secondary injuries, including neuroinflammation and the disruption of the blood-brain barrier (BBB). These processes ultimately induce a systemic acute-phase response (APR), particularly involving the liver. Similarly, obesity is characterized by a state of chronic low-grade inflammation that affects the hepatic tissue and activates pro-inflammatory pathways which are involved in the induction of neuroinflammation. This study hypothesized a potential relationship between these two diseases. To investigate this, mice were fed either a high fat diet (HFD), or a standard diet (SD) for 12 weeks prior to undergoing either controlled control impact (CCI)-induced TBI, or sham surgery. Afterwards, assessments were conducted at different time points. These obtained findings suggest that further investigation is needed to elucidate the underlying responsible mechanisms.